SOURCE CONTROL MEASURE IMPLEMENTATION PLAN

This plan proposes source control measures (SCMs) and further source investigations for the ODOT highways in the Portland Harbor area. The plan addresses Portland Harbor-wide SCMs and activities targeting individual drainage basins for ODOT-owned outfalls and for groupings of drainage basins that ODOT facility runoff contributes to, organized by georegion. For more detailed information about the drainage basin areas, refer to ODOT's Stormwater Assessment for Source Control Evaluation Report. A timeline for SCM implementation is included at the end of this report.

ODOT will also implement a monitoring program to evaluate the effectiveness of SCMs. The sampling work plan for effectiveness monitoring will be developed in coordination with DEQ and completed by early 2016 with equipment mobilization and sampling efforts to begin in the winter of 2016. The monitoring work plan will include targeted stormwater sampling, catch basin sediment grab samples, and sampling of removed solids to determine if SCMs are effective at decreasing levels of contaminants in stormwater across highway facilities. The details of how many, what type, and what locations sampling will occur will be worked out with ODOT and DEQ in close collaboration.

Results of the SCM Implementation Plan and subsequent effectiveness demonstration will be included in a Source Control Evaluation Report.

Portland Harbor-wide Source Control Measures

1) ODOT will carry out, track, and evaluate a sweeping program in the Portland Harbor area. The sweeping program will entail the following:

    a. Sweeping approximately every six weeks of areas of highway that drain to Portland Harbor from I-5 and I-405, including the Fremont Bridge, and Highway 26. An estimate will be recorded of how much sediment was removed and the precipitation conditions over an 18 month period. The sweepings will be sampled 2-3 times to determine typical sediment size, quality, and the presence of any contaminants of concern.

    b. ODOT maintenance staff has some experience outside of Portland Harbor in implementing tandem sweeping as a more efficient and effective method of removing sediment from the roadway. ODOT will implement a pilot on areas of highway that drain to Portland Harbor from I-5 and I-405, including the Fremont Bridge, and Highway 26. This will entail running two sweepers back to back with the idea that more sediment, including more fine grain solids, will be removed using this method. The amount of sediment removed using tandem

sweeping will be compared to using a single sweeper to determine if this is an effective BMP for these Portland Harbor areas.

c. Highway 30 and the St. John's Bridge are currently swept by the City of Portland. ODOT will ensure that sweeping in these areas, either by the City or ODOT, is accomplished to minimize entrainment of solids in ODOT's stormwater discharges to Portland Harbor. This may entail increased sweeping frequency, use of regenerative or tandem sweepers, or other operational approaches.

2) Catch basins throughout the ODOT facilities draining to Portland Harbor will be routinely cleaned with a goal of cleaning all catch basins twice a year. A standardized maintenance log will help track the approximate amount of sediment removed. The necessity of catch basin cleaning varies by location, drainage conditions, and weather so ODOT will develop an inspection routine to visually inspect the catch basins on approximately a monthly basis during the wet season to determine which areas could benefit from more frequent cleaning. The inspections will look for areas where sediment builds up over capacity, identify areas where access to catch basins is limited due to property use by another party, and identify areas where pipes may be in disrepair. The areas where catch basins get filled more often will be prioritized for more frequent cleaning and identified problem areas will be targeted for repair and maintenance. The catch basin inspection and maintenance log tracking will begin in the winter of 2014/2015. Actions to address areas that have been identified and prioritized for drainage repair or more frequent maintenance will be investigated and implemented where feasible starting in summer 2016.

3) Representative sections of pipe (12" diameter or larger) will be inspected with a camera to fulfill three objectives.

a. Storm pipes that are near mapped contaminated groundwater plumes will be inspected to see if they are damaged and could be contaminated by the plume and will be the first priority for investigation. Damaged pipes will be engineered for an appropriate repair or replacement and addressed as soon as practical. The initial priority areas for this investigation are:

i. pipes along Highway 30 in the vicinities of MP 5.5- 6.2 upland of the plume at North Doane Lake;

ii. pipes along Highway 30 that are upland of the medium risk plumes adjacent to the high risk North Doane Lake plume;

iii. the WR-306 pipe system that overlaps with the groundwater plume in the Albina georegion; and

iv. pipes along Highway 30 in the vicinity of MP 7.6 – 7.9 upland of a plume in the Linnton Area.

Comment [al1]: In our meeting you indicated that the City cleans CBs on Hwy 30. Is this also under negotiation? If not, please consider including it in your discussions with the City. Otherwise please specify the facility areas where CBs will be cleaned. Eventually this should be mapped.

Comment [UJ2]: You are correct and the City is responsible for CB cleaning. It will be part of our discussion with the city.

Comment [al3]: We discussed preparing a map of sections that will be inspected. Eventually, figures showing which sections were inspected, cleaned, repaired, didn't need cleaning, etc should be prepared for the SCE Report. CBs cleaned, sweeping areas and other SCMs can all be on one set of figures…

Comment [UJ4]: We will have a map showing where we did camera work and what the result of the investigation was. However I don't think a figure showing which CBs were cleaned would be helpful as the crews go out and clean all of them along the stretch of highway they are working on and this can number in the 80s or 90s. We can discuss this more at our next meeting.

The exact location and extent of the pipe work will be determined by ODOT maintenance staff based on accessibility, pipe location and size.

b. In each georegion that receives ODOT stormwater runoff, pipes will be inspected to determine if there is problematic sediment build-up causing reduced hydraulic capacity. The sections of pipe to be investigated will be determined in coordination with the maintenance crew and depending on pipe size, accessibility, and proximity to any known drainage concerns.

    i. Initial priority areas for this investigation include areas where sampling has shown exceedances of contaminants in stormwater solids or stormwater: Albina (WR-306), Highway 30 in Guilds Lake and Doane Lake/Willbridge and St Johns Bridge (OF 52). Investigation of all other areas will be accomplished following these priority areas.

    ii. The cleaning operations and inspections will look to identify areas where pipes may be in disrepair or have experienced sediment accumulation. If the pipes are not damaged but are found to have sediment build-up causing reduced hydraulic capacity and are accessible by vactor truck equipment, they will be cleaned as soon as practicable or by the end of 2016. Damaged pipes will be engineered for an appropriate repair or replacement and addressed as soon as practical.

c. The investigation will also help ODOT identify if there are any illicit connections to the stormwater system. If any illicit connections are found, the owner of the pipe will be determined and source control measures will be pursued with that party.

ODOT will put together maps showing the areas that were investigated and the status of the investigation, whether the pipes were cleaned, in need of repair, or if no follow up was needed.

Albina Georegion - Drainage Basin WR-306

Outfall WR-306 is an ODOT-owned outfall located underneath the Fremont Bridge on the east side of the Willamette River, located at approximately river mile 11.16 and in the Albina georegion.

Drainage Basin Contribution

Nearly the entire drainage basin for outfall WR-306 is contained within the ODOT Right-of-Way and drains approximately 35.1 acres of I-5, an interstate facility that has an AADT that ranges from 30001 to 75,001+ in the drainage area and the eastern ramps to the Fremont Bridge, which is I-405. Stormwater from the top deck of the Fremont Bridge drains to the river through channelized scuppers. The Portland Harbor-wide SCMs will apply to these drainage basins.

Recommendations

SCMs to be implemented:

1) Source investigation into the Stanton Yards to determine whether there is an inadvertent connection to ODOT's storm system. The City of Portland (the City) temporarily stores street sweepings at the Stanton Yards underneath highway overpasses. The area has multiple sewer lines running parallel to each other, built at different times, and owned by various parties. Dye testing will be done at specified catch basins to see if they connect to the 306 line. If a connection is found, ODOT will approach the City of Portland and require the City to implement source control measures to prevent discharge into ODOT's drainage system or to have it treated before discharging from WR-306.

2) Based on review of maintenance records, the CDS unit in the WR-306 basin accumulates a significant volume of sediment despite being maintained annually in accordance with manufacturer recommendations. Given the large amount of sediment observed, more frequent maintenance may be appropriate. ODOT will investigate the maintenance of the CDS unit and evaluate whether a retrofit of the unit would be beneficial to water quality. At this time the CDS unit is cleaned out once a year because access to trapped sediment is limited during the wet season. If possible, the maintenance frequency will be increased to increase effectiveness of the CDS unit. If increased maintenance is not possible, ODOT will retrofit the existing unit or install an additional facility within the drainage system.

Pearl Georegion

Outfall WR-307 is an ODOT-owned outfall located underneath the Fremont Bridge on the west side of the Willamette River, located at approximately river mile 11. Most of the drainage basin for outfall WR-307 is contained within the ODOT Right-of-Way and approximately 43.2 acres consisting of I-405, the eastern Highway 30 interchange, and access ramps to Highway 26 drains through this outfall. These facilities have an AADT that range from 30001 to 75,001+ in the drainage area.

Outfall 11 is a City-owned outfall located on the west side of the river near river mile 11.4. Approximately 20.5 acres of Highway 26 contribute to the upper basin of OF-11. The basin area includes residential, commercial, and open space land use and the total basin is approximately 949 acres. Runoff from Highway 26 represents approximately 2% of the basin and is treated in four water quality swales.

Recommendations

The Portland Harbor-wide SCMs will apply to the outfalls in this georegion

Guilds Lake Industrial Georegion

Highway 30 in this georegion starts just north of the intersection of Hwy 30 and NW Nicolai Street and ends just south of the intersection of Hwy 30 and NW 55th Ave. Two outfalls that

receive highway runoff contributions were monitored in this area and are representative of highway runoff in this georegion. OF 16 and OF 18 receive 3.9 and 7.8 acres of runoff in an industrial area with AADT of 20001-30000. OF 17 and 19 receive highway runoff and the SCM for this georegion will apply to contributions to this outfall, however the outfall basins were not monitored. The Portland Harbor-wide SCMs will apply to these outfall basins.

Recommendations

1) ODOT will identify areas of ODOT-owned right of way adjacent to Hwy 30 through the Guilds Lake area with opportunities for retrofitting, improvement or new structures in the area that would improve water quality. Through a review of mapping and site visits, ODOT will compile a list of ditches along Highway 30 and determine which ditches are within ODOT right of way. If performance monitoring indicates that the Harborwide SCMs (increased or improved sweeping, pipe investigation and cleanout and increased catch basin cleaning) are not adequately effective, ODOT will implement runoff treatment improvements identified and possible retrofits in ditches within ODOT right of way will be investigated and implemented where feasible.

Doane Lake/Willbridge Georegion

Highway 30 in this georegion starts just south of the intersection of Hwy 30 and NW 55th Ave and runs up to just south of the St. John's Bridge. Four outfalls that receive highway runoff contributions were monitored in this area and are representative of highway runoff in this georegion. The outfalls are 22, 22C, 205 and 206. The outfalls receive 7.76, 6.86, 6.03, and 6.0 acres respectively of runoff in an industrial area with AADT of 20001-30000. Outfalls 584, 207 and 22 receive highway contribution but were not monitored. The Portland Harbor-wide SCMs will apply to these outfall basins.

Recommendations

1) The ditch just south of Doane Lake east of Hwy 30 near MP 5.4 – 5.5 is in the railroad right-of-way and has erosion concerns. The ditch appears to be a significant source of sediment in the stormwater that drains to OF 22C so stabilizing the ditch would reduce sediments entering the stormwater system. It is on railroad right of way (Burlington Northern) so ODOT's maintenance and/or rail division staff will attempt to engage the railroad in discussions to work cooperatively to install erosion control measures.

2) ODOT will identify areas of ODOT-owned right of way adjacent to Hwy 30 through the Doane Lake/Willbridge area with opportunities for retrofitting, improvement or new structures in the area that would improve water quality. Through a review of mapping and site visits, ODOT will compile a list of ditches along Highway 30 and determine which ditches are within ODOT right of way. If performance monitoring indicates that the Harborwide SCMs (increased or improved sweeping, pipe investigation and cleanout and increased catch basin cleaning) are not adequately effective, ODOT will implement runoff treatment improvements identified and possible retrofits in ditches within ODOT right of way will be investigated and implemented where feasible.

Linnton Georegion

Highway 30 in this georegion starts just south of the intersection of Hwy 30 and the St John's Bridge and runs north to the end of the Portland Harbor area. Seven outfalls that receive highway runoff contributions were monitored in this area and are representative of highway runoff in this georegion. The outfalls are WR 510 (ODOT-owned), WR 211, OF 22D, WR 202, WR 126, WR 204, and the Miller Creek drainage basin. The outfalls receive 1.4, 5.63, 5.44, 4.97, 4.5, and 4.06 acres of runoff in an industrial area with AADT of 20001-30000. Outfalls 153, 79, 102, 203, 209, and 208 receive highway contribution but were not specifically monitored. The sweeping and Portland Harbor-wide SCMs will apply to these outfall basins.

Recommendations

1) There are 2 water quality manholes (also referred to as CDS units) in this georegion. During the first few years of operation, the CDS units were not maintained on an annual basis, but they are currently maintained annually. Regular maintenance of the units should result in reduced contaminant concentrations in ODOT runoff contributing to OF 22C and from outfall 510. The units will be cleaned on an annual basis and ODOT will continue to monitor these outfalls to verify improved water quality. If monitoring suggests additional BMPs are needed, ODOT will evaluate the options, including retrofitting the existing facilities, and implement an appropriate control measure. The maintenance of the CDS unit will be tracked and reported to determine if annual maintenance has continued to reduce contaminant concentrations.

2) ODOT will identify areas of ODOT-owned right of way adjacent to Hwy 30 through the Doane Lake Willbridge area with opportunities for retrofitting, improvement or new structures in the area that would improve water quality. Through a review of mapping and site visits, ODOT will compile a list of ditches along Highway 30 and determine which ditches are within ODOT right of way. If performance monitoring indicates that the Harborwide SCMs (increased or improved sweeping, pipe investigation and cleanout and increased catch basin cleaning) are not adequately effective, ODOT will implement runoff treatment improvements identified and possible retrofits in ditches within ODOT right of way will be investigated and implemented where feasible.

St. Johns Georegion

The ODOT facility, NE Portland Highway aka US 30 Bypass, in this georegion starts at the St. Johns Bridge and ends at the intersection of N Richmond Ave and N Jersey St in North Portland. One City-owned outfall, OF 52, was monitored in this georegion. OF 52 receives approximately 2.7 acres of runoff from the St. Johns Bridge and the runoff goes through a water quality manhole before being discharged to the river. OF 49 and 50 receive highway contribution and the stormwater is treated before being discharged to the river so no SCMs are proposed for those outfall basins.

Recommendations

1) One water quality manhole is located in this georegion and treats highway runoff before it enters the river thru OF 52. The data as shown in Table 5-10 demonstrates effectiveness of the CDS Stormwater Treatment facility in reducing contaminant concentrations so it is anticipated that more frequent maintenance and cleaning of the device will yield better results. During the first few years of operation, the CDS unit was not maintained on an annual basis. Regular maintenance of the unit should result in a reduction of contaminant concentrations. The unit will be cleaned on an annual basis and ODOT will continue to monitor this outfall to verify improved water quality. If monitoring suggests additional BMPs are needed, ODOT will evaluate the options (Sweeping, Catch Basin cleaning, Storm drain cleaning, etc) and implement an appropriate control measure.

2) If the concentration of PCBs continues to be above SLVs and exceeding the knee of the stormwater curve after continued maintenance of the CDS unit and sweeping enhancements, then ODOT will investigate other possible sources of PCBs in the outfall 52 basin. This may include an investigation into what types of maintenance products are used in this area and on the St. Johns Bridge that could end up in stormwater and an analysis of the PCB concentrations of those products. If PCBs are found in products that are used in maintenance activities in this area, ODOT will investigate alternative products with lower PCB concentrations.

Contingency Actions

If after effectiveness monitoring, it is determined that contaminant concentrations in stormwater still exceed SLVs, ODOT will evaluate whether appropriate SCMs and BMPs have been implemented to the extent feasible and whether the existing discharges are not likely to have an unacceptable impact on the river. This may include a loading/recontamination evaluation. If it is found that the discharges are likely to have an unacceptable impact on the river, ODOT will investigate and implement contingency stormwater source control measures, if feasible. Examples of measures that will be considered are ditch retrofits, vegetated swales, in-line filer devices, and proprietary water quality facilities.

	SCM	Area	Steps	Targeted Deadline	Responsible Party(ies)[1]
1	Effectiveness Monitoring Plan	Portland Harbor-wide	Develop draft of monitoring plan that will demonstrate effectiveness of SCMs listed below	March 2016	Herrera
2	Pipe Investigation with Camera	Portland Harbor-wide	Develop priority list of pipe sections (1 – down slope or in the vicinity of known contaminated groundwater plume; 2 – suspected area of drainage concern) in each georegion	August 2015	ODOT maintenance + R1 Tech Center
			Develop schedule for camera activities	September 2015	
			Review field reports and evaluate need for cleaning or repair + Plus illicit connection ID	March 2016	
			Develop list of maintenance needs and determine appropriate resource needs for completion	December 2016	
4	Maintenance – Catch basin inspection and ID of problem areas	Portland Harbor-wide	Develop protocol and log for tracking catch basin inspections and documenting needs	January 2015	ODOT maintenance
			Compile and organize drainage problem areas and coordinate with technical section to get on the list for repair or cleaning	April 2016	
5	Maintenance –	WR 306 and 307 outfall	Develop plan for sweeping data	April 2015	ODOT

[1] ODOT's Portland Harbor project team will be involved in all SCMs in some capacity.

	Sweeping study	basins	collection		maintenance + Herrera
			In coordination with the monitoring plan, determine if there is any demonstrable difference with tandem sweeping	September 2016	
			Determine if sweeping activities implemented by ODOT is sufficient for stormwater management or if changes should be made to the sweeping program	September 2016	
6	Investigate CDS unit retrofit	WR 306 outfall basin	Determine retrofit options	End of 2015	ODOT R1 Tech Center
			Select an option and have designer work with maintenance staff to design and implement	End of 2018	
7	Maintenance – Assure and monitor continued CDS unit maintenance	WR 306, WR 510, and OF 22C outfall basins	Annual WQF Maintenance Form review	Ongoing	ODOT maintenance
8	Source Investigation	WR 306 outfall basin	Determine all inlet locations for testing	September 2015	Herrera
			Dye testing at select inlets to determine if they connect to outfall 306 system		
9	Ditch stabilization near Doane Lake	OF 22C outfall basin	Discuss with railroad options for ditch stabilization	November 2015	ODOT maintenance + ODOT R1 Tech Center + ODOT Rail Division

10	Investigate sweeping responsibility of Hwy 30 section currently under City of Portland	Guilds Lake, Doane Lake/Willbridge, and Linnton Georegions	Communicate with City of Portland Maintenance staff to determine general schedule of sweeping activities on Hwy 30	September 2015	ODOT maintenance
			If the level of service is not up to ODOT standards, determine the resource need for taking on sweeping of Hwy 30 section currently under Portland maintenance responsibility	December 2015	
			If more frequent sweeping activities are needed, evaluate options for implementation	April 2016	